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| APPLICATION NO. | FILING DATE | FIRST NAMED INVENTOR | ATTORNEY DOCKET NO. | CONFIRMATION NO. |
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| 10/813,413 | 03/30/2004 | Naoki Yanagisawa | 5616-0088 | 5632 |

35301 7590 09/02/2004

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EXAMINER

TRIEU, THAI BA

| | |
|----------|--------------|
| ART UNIT | PAPER NUMBER |
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3748

DATE MAILED: 09/02/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary

Application No.

10/813,413

Applicant(s)

YANAGISAWA ET AL.

Examiner

Thai-Ba Trieu

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

- 1) ☐ Responsive to communication(s) filed on ____.
- 2a) ☐ This action is **FINAL**. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) ____ is/are withdrawn from consideration.
- 5) ☐ Claim(s) ____ is/are allowed.
- 6) ☒ Claim(s) 1-3, 5-10 and 12 is/are rejected.
- 7) ☒ Claim(s) 4, 11 and 13-15 is/are objected to.
- 8) ☐ Claim(s) ____ are subject to restriction and/or election requirement.

Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 30 March 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some * c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. ____.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

- 1) ☒ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☒ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)
Paper No(s)/Mail Date 03/30&08/03/2004.
- 4) ☐ Interview Summary (PTO-413)
Paper No(s)/Mail Date. ____.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: ____.

DETAILED ACTION

The Preliminary Amendment filed on August 23, 2004 is acknowledged.

Drawings

Figure 3 should be designated by a legend such as --Prior Art-- because only that which is old is illustrated. See MPEP § 608.02(g). Corrected drawings in compliance with 37 CFR 1.121(d) are required in reply to the Office action to avoid abandonment of the application. The replacement sheet(s) should be labeled "Replacement Sheet" in the page header (as per 37 CFR 1.121(d)) so as not to obstruct any portion of the drawing figures. If the changes are not accepted by the examiner, the applicant will be notified and informed of any required corrective action in the next Office action. The objection to the drawings will not be held in abeyance.

Specification

The disclosure is objected to because of the following informalities:

1. In Paragraph [0011], line 11, "**less speed**" should be replaced by -- **lower speed** -- (for the consistency with the claims as being amended in the Preliminary Amendment filed on 08/23/2004).

2. In Paragraph [0014] line 6, "**the**" before "**some of the exhaust gas**" should be deleted; and line 7, "**less speed**" should be replaced by -- **lower speed** -- (for the consistency with the claims as being amended in the Preliminary Amendment filed on 08/23/2004).

Appropriate correction is required.

Claim Rejections - 35 USC § 102

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

Claims 1-2 and 5-6 are rejected under 35 U.S.C. 102(b) as being anticipated by Bailey (Patent Number 6,009,709).

Regarding claim 1, Bailey discloses a turbocharged engine (10) with EGR comprising a turbocharger (32) having a turbine (42) and a compressor (46), an EGR passage (56, 60) connecting an exhaust passage upstream of the turbine (42) of the turbocharger (32) and an intake passage (38) downstream of the compressor (46) to each other for returning some of exhaust gas in the exhaust passage to the intake passage (38), and an EGR valve (58) provided in the EGR passage (56, 60) for adjusting a passage area of the EGR passage,

wherein capacity of the turbine is set such that in a high speed and high load region of the engine operating state, if the exhaust gas is supplied to the turbine with the EGR valve closed, the turbocharger overruns beyond a maximum speed limit, and if the EGR valve is opened to return some of the exhaust gas to an intake passage side, the turbocharger rotates at lower speed than the maximum speed limit (See Figure 1, Abstract, Column 1, lines 45-51, Column 2, lines 6-16 and 35-53) .

Regarding claim 2, Bailey further discloses a control device (69) for opening the EGR valve (58) in a region that the turbocharger overruns beyond the maximum speed limit (See Figure 1, and Abstract).

Regarding claims 5-6, Bailey further discloses a charge cooler (36) for cooling intake air (38), which is provided in the intake passage and located at downstream side of a position to which the EGR passage is connected (See Figure 1); and an EGR cooler (82) for cooling EGR gas being provided in the EGR passage (See Figure 1).

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 3 and 7 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey (Patent Number 6,009,709), in view of Coleman et al. (Patent Number 6,484,500 B1).

Bailey discloses the invention as recited above; however, Bailey fails to disclose the turbocharger has a high stage turbine and a low stage turbine; and the EGR cooler being provided in the EGR passage downstream side of the EGR valve.

Coleman et al. teach that it is conventional in the emission control system art of an engine having multiple turbochargers, to utilize the turbocharger having a high stage

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turbine (50) and a low stage turbine (30) provided in series in the exhaust passage of the engine, and a high stage compressor (54) and a low stage compressor (34) provided in series in the intake passage of the engine and respectively driven by each of the turbines (52, 32), and the EGR passage (88) connects the exhaust passage upstream of the high stage turbine (52) and the intake passage downstream of the high stage compressor (54) to each other (See Figures 1-4); and the EGR cooler (92) being provided in the EGR passage downstream side of the EGR valve (86) (See Figures 1-2).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized the turbocharger has a high stage turbine and a low stage turbine, and the EGR cooler being provided in the EGR passage downstream side of the EGR valve, as taught by Coleman et al., to improve the efficiency of the Bailey turbocharged internal combustion engine.

Claims 8-10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey (Patent Number 6,009,709), in view of the Admitted Prior art of Yanagisawa Naoki (Pub. Number 2000-249004 A).

Bailey discloses the invention as recited above, and further discloses an EGR cooler (82) for cooling EGR gas being provided in the EGR passage (60) (See Figure 1); however, fails to disclose a check valve, the function and location of the check valve.

Yanagisawa Naoki teaches that it is conventional in the EGR system art of a turbocharged internal combustion engine, to utilize a check valve (8) being provided in

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the EGR passage (4a) to allow a flow only in a direction from the exhaust passage to the intake passage and to prevent the flow in an opposite direction thereof (See Figures 1-6, and Abstract); wherein the check valve (8) is provided in the EGR passage downstream side of the EGR valve (5) (See Figures 1-6); and

a check valve (8) being provided in the EGR passage (4a) downstream of the EGR cooler (4c) to allow a flow only in a direction from the exhaust passage to the intake passage and to prevent the flow in an opposite direction thereof (See Figures 1-6).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized a check valve, the function and location of the check valve, as taught by Yanagisawa Naoki, to improve the efficiency and to reduce the exhaust emissions of the Bailey turbocharged internal combustion engine.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Bailey (Patent Number 6,009,709), in view of Falleti (Patent Number EP 1 213 467 A2).

Bailey discloses the invention as recited above, and further discloses the engine is a multi-cylinder engine and has an exhaust manifold divided into two or more; however, Bailey fails to disclose each part of the divided exhaust manifold being individually connected to the intake passage by two or more of the EGR passage.

Falleti teaches that it is conventional in the EGR system art of a turbocharged internal combustion engine, to utilize each part of the divided exhaust manifold (18, 20)

being individually connected to the intake passage by two or more of the EGR passages (52, 54) (See Figure).

It would have been obvious to one having ordinary skill in the art at that time the invention was made, to have utilized each part of the divided exhaust manifold being individually connected to the intake passage by two or more of the EGR passage, as taught by Falleti, to improve the control of the flow of exhaust gases from the exhaust manifolds.

Allowable Subject Matter

Claims **4, 11, and 13-15** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

The IDS (PTO-1449) filed on March 30, 2004 and August 03, 2004 have been considered. Each initialized copy is attached hereto.

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

- Mader et al. (US Patent Number 6,715,289 B2) disclose a turbo-on-demand with cylinder deactivate.
- Schmidt et al. (US Patent Number 6,202,414 B1) disclose a method and apparatus for regulating a supercharged internal combustion engine.

- Landfahrer et al. (Patent Number 6,062,027) disclose an internal combustion engine with an exhaust gas turbocharger.

- Henderson et al. (US Patent Number 5,611,203) discloses an exhaust gas recirculation system for an internal combustion engine having an ejector pump enhanced high pressure EGR system.

- Pischinger et al. (US Patent Number 5,671,600) discloses a method of reducing the NOx emission of a supercharged piston type internal combustion engine.

- Asada et al. (US Patent Number 5,562,086) disclose a control device of a variable cylinder engine having six cylinders with the firing order being 1-5-3-6-2-4.

- Iizuka et al. (US Patent Number 4,143,635) disclose an exhaust gas recirculated engine with variable cylinder disablement control.

- Bachle et al. (US Patent Number 5,517,976) disclose a diesel engine equipped for reducing harmful substances in the operation.

- Yanagihara et al. (US Patent Number 5,142,866) disclose a sequential turbocharger system for an internal combustion engine.

- Tominaga (Pub. Number JP 2004-124749 A) discloses an exhaust device for a turbocharged engine.

- Tanaka et al. (Pub. Number JP 2004-100508 A) disclose an EGR device for internal combustion engines.

- Ozu Taku (Pub. Number JP 2000-064912 A) disclose an EGR device.


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Any inquiry concerning this communication or earlier communications from the examiner should be directed to Thai-Ba Trieu whose telephone number is (703) 308-6450. The examiner can normally be reached on Monday - Thursday (6:30-5:00).

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Thomas E. Denion can be reached on (703) 308-2623. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

TTB
August 31, 2004



Thai-Ba Trieu
Patent Examiner
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